REMARKS

Claims 1-14 are rejected under 35 USC § 103(a) as being obvious over *Bader et al.* (WO 95/15256) in view of *Gonioukh et al.* (U.S. Patent Application Publication 20040214971). Claims 2-4 and 7-9 are rejected further based on the "applicant's admitted prior art," ASTM D4976-98. Claims 10-12 are rejected further based on Sigma-Aldrich's product catalog. Applicant respectfully requests that the Examiner withdraw the rejections for the reason that follows.

Applicant's invention is an MDO method for multilayer film. MDO (machine direction orientation) is a uniaxial orientation in the machine direction. As Applicant explains in the Summary of the Invention, when a film is stretched, its dart-drop impact strength is usually reduced as the film becomes thinner. Surprisingly, Applicant found that when a multilayer film is oriented in the machine direction beyond a certain draw-down ratio, the dart-drop strength of the film increases with increasing draw-down ratio and the oriented film can eventually have a dart-drop value greater than that of the original film. See the Summary of the Invention, page 3, lines 8-16.

In contrary to the Examiner's assertion, neither *Bader et al.* nor *Gonioukh et al.* teaches MDO, and thus any combination of these two cannot make the claimed invention obvious.

First, *Bader et al.* teaches a <u>biaxial orientation</u>. Unlike MDO which orients the film only in the machine direction, biaxial orientation orients the film in both the machine direction and the transverse direction. This is evidenced by *Bader et al.*'s "Abstract" on its title page, which states "The films are cast, and <u>oriented</u> in the solid state up to about 2 times <u>in the machine direction and</u> six times or more <u>in the transverse direction</u> . . . ." (Emphasis added).

Evidences for *Bader et al.*'s teaching of biaxial orientation, rather than MDO, are plentiful.

On page 4, lines 3-4, *Bader et al.* states: "The film composition of the present invention can comprise a biaxially oriented high density base layer of at least 50 weight percent of a high density polyethylene having a density of 0.96 or higher." (Emphasis added).

On page 11, lines 10-11, *Bader et al.* states: "The benefits of reduced WVTR are due to the improvements obtained by biaxial orientation below the HDPE melting point." (Emphasis added).

On page 11, lines 22-25, *Bader et al.* states: "The HDPE base film is oriented either before or after the skins are applied to a degree of 1.1:1 to 2:1, usually from 1.25:1 to 2:1, in the machine direction (MD), and to a degree of 6:1 to 12:1 in the transverse direction (TD)." (Emphasis added).

On page 12, *Bader et al.* states: "In the usual manner the film is heated to its orientation temperature and first subjected to MD orientation . . . . Then the film is TD oriented . . . . Typically MD orientation is conducted at 60° to 120° and TD orientation at 110° to 160°." (Emphasis added).

More particular, in all Examples (Examples 1-5), *Bader et al.* shows "three layer biaxially oriented film." See pages 12-14.

As shown above, *Bader et al.* does not teach MDO. Nor does *Gonioukh et al.* teach MDO.

Note that *Gonioukh et al.* discusses draw down in terms of the blown film process, which is done with the polymer in melt. It is basically how much the melt is drawn as the polymer exits the die prior to crystallization. In contrary, the MDO process is done in the solid state (below the melting point of the polymer) and is a secondary process to the blown film process.

The Examiner, in the rejection, particularly points out *Gonioukh et al.*'s comparative examples 1 and C of Table 2. As discussed above, these examples

show the draw down in the blown film process, rather than in MDO. Further, as a whole, *Gonioukh et al.* teaches a free radical polymerization of ethylene with cyclic peroxide. *Gonioukh et al.* thus uses Table 2 to show the differences of the polymers made by the cyclic peroxide (Ex.1) and non-cyclic peroxide (Ex. C). Note that the difference of Ex. 1 and Ex. C in dart drop impact is largely contributed by the differences in the polymer physical properties such as density and MI (see Table 1 of *Gonioukh et al.*). Therefore, comparing Ex.1 with Ex. C is like comparing apples with oranges. To compare apples with apples, Ex. A should be compared with Ex. 1, Ex. B with Ex. 2, and Ex. C with Ex. 3 of Table 2 because the polymer pairs have similar MI and density. By such comparison, the Examiner should find that the dart drop strength decreases with increasing draw down, which is typical in blown film. This comparison shows exactly the opposite of what the Examiner asserts in the rejection.

MPEP §2143.03 provides that "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). As discussed above, neither *Bader et al.* nor *Gonioukh et al.* teaches or suggests MDO. Thus, the combination of *Bader et al.* and *Gonioukh et al.* cannot make claim 1 obvious because the combined teachings fail to suggest the claimed MDO method.

Regarding the rejections of claims 2-4 and 7-9 which are further based on the "applicant's admitted prior art," ASTM D4976-98 and the rejections of claims 10-12 which are further based on Sigma-Aldrich's product catalog, Applicant does not need to address these separately. As discussed above, claim 1 is patentable, claims 2-14, which depend from claim 1, are thus patentable.

In summary, Applicant respectfully requests that the Examiner withdraw the rejections and allow remaining claims 1-14. Applicant invites the Examiner to telephone his attorney, Shao-Hua Guo, at (610) 359-6059 if a discussion of the application might be helpful.

Respectfully submitted,

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